REMARKS

The Applicants wish to thank the Examiner for the courtesy of a telephonic interview ("the Interview") with the undersigned representatives on February 15, 2005. During the Interview, the cited references were discussed. Applicants' representatives urged that none of the references teach or suggest the claimed invention. In particular, Applicants' representatives urged that the Nakacho reference does not teach the claimed compositions, in which a phosphazene compatibility enhancing resin or anti-bleed-out resin is present in the claimed amounts, and provides enhanced compatibility between the polyamide resin and the phosphazene flame retardant. Applicants' representatives additionally contended that the problem of bleed-out is not disclosed by Nakacho, and moreover that the Ida reference suggests that the use of polyamide resins with flame retardants in general was not well understood. Although no final agreement was reached, the Examiner agreed to consider a Response in which Applicants' position was explained in detail.

Claims 15 and 16 have been amended to rewrite the claims in independent form. Now pending are claims 1–16. No new matter has been added.

Amendment of any claim herein is not to be construed as acquiescence to any of the rejections/objections set forth in the instant Office Action, and was done solely to expedite prosecution of the application. Applicants make these amendments without prejudice to pursuing the original subject matter of this application in a later filed application claiming benefit of the instant application, including without prejudice to any determination of equivalents of the claimed subject matter.

The Invention

The presently-claimed invention is directed to flame retardant resin compositions comprising a thermoplastic polyamide resin, a phosphazene compound, and a phosphazene compatibility enhancing resin or anti-bleed-out resin consisting essentially of a polyphenylene

ether-based resin, or a mixture of a polyphenylene ether-based resin and a polystyrene based resin.

Previously-known flame retardant resins suffer from problems such as corrosion of molding machines due to the flame retarder component, bleed-out of the flame retarder, and mold deposits. The present invention provides flame retardant resin compositions having excellent flame retardancy, mechanical properties, and heat resistance.

As described above and in the subject specification, polyamide resin can suffer "bleed-out" of a phosphazene flame retardant due to poor compatibility of the phosphazene additive with the polyamide. It has been discovered by the present inventors that the addition of certain amounts of a polyphenylene ether-based resin (PPE) or polystyrene ether-based resin (PS) (or a mixture of PPE and PS) to the polyamide resin can reduce or prevent the bleed-out of the flame retarder in the polyamide resin composition. The compositions of the invention therefore represent an improvement over the prior art compositions.

Claims Rejections – 35 U.S.C. §102(b)

Claims 1-9 stand rejected under 35 U.S.C. §102(b) as unpatentable over Nakacho *et al.*, EP 0945478 ("Nakacho"). This rejection is traversed.

As the reference is understood, Nakacho discloses flame retardants and flame retardant resins comprising a thermoplastic resin and a crosslinked phenoxyphosphazene compound. The phenoxyphosphazene compound can be selected from a group of cyclic phosphazenes or straight-chain phosphazenes. A lengthy list of possible thermoplastic resins is recited by Nakacho at page 10, paragraphs 75-77. Although Nakacho mentions polyamide as one possible resin, Applicants note that compositions including polyamide resins are not exemplified through working examples in the Nakacho reference.

Applicants respectfully submit that Nakacho provides no teaching or suggestion of a composition according to the presently-pending claims. In particular, Nakacho does not teach or suggest a flame-retardant resin having a thermoplastic polyamide resin, a phosphazene compound and a phosphazene compatibility enhancing resin (or anti-bleed-out resin) consisting essentially of a polyphenylene ether (PPE)-based resin, or a mixture of PPE resin and a polystyrene (PS)- based resin in the amounts required by the pending claims. While the Nakacho reference mentions in passing that combinations of thermoplastic resin can be used, there is no teaching of the *specific combinations* of materials required by the pending claims, nor are the claimed *amounts* of resins disclosed in Nakacho.

It is well established that a reference cannot anticipate a claim unless the reference discloses each and every limitation of the claim. See, e.g., MPEP 2131. In the present case, the Nakacho reference lacks any teaching that a polyamide resin and a phosphazene flame retardant are used together with a phosphazene compatibility enhancing resin in the claimed amounts. Because the reference does not teach *all elements* of the claimed invention, the reference cannot anticipate the claims.

In support of the rejection, the Examiner points to the Nakacho reference as teaching a "[c]omposition compris[ing] (a) 100 parts by wt of resin, (b) 0.1 to 100 parts by wt of a flame retardant, and (c) 0.1 to 50 parts by wt of organic phosphorus compound (page 4, lines 6-13)." As discussed during the Interview, Applicants respectfully submit that this portion of the Nakacho reference does not teach or suggest all elements of the claimed invention.

Paragraph 26 of Nakacho (at page 4, lines 6-13) describes certain resin compositions denominated (a), (b), (c), and (d), each including a thermoplastic or thermosetting resin (100 parts by weight) and "flame retardant A" (0.1 to 100 parts by weight for resins (a), (b), and (d); 0.1 to 50 parts by weight for resin (c)). "Flame retardant A" of Nakacho is described at paragraph 24 of Nakacho (page 3, lines 53-54) as "a flame retardant comprising said crosslinked phenoxyphosphazene compound." Composition (c), which the Examiner appears to be citing above, additionally includes "0.1 to 50 parts by weight of an organic phosphorus compound free

of halogen." Nakacho further teaches (e.g., at page 2, lines 29-33) that organic phosphorus compounds are useful as flame retardants.

Thus, the resins described at paragraph 26 of Nakacho include a thermoplastic or thermosetting resin and a phenoxyphosphazene flame retardant, optionally further including materials such as inorganic fillers or additional flame retardants. None of these compositions, including composition (c) of Nakacho, includes a phosphazene compatibility enhancing resin (or anti-bleed-out resin) consisting essentially of a polyphenylene ether (PPE)-based resin, or a mixture of PPE resin and a polystyrene (PS)- based resin, in the amounts required by the pending claims.

Accordingly, the Nakacho reference cannot and does not anticipate any of the subject claims. Reconsideration and withdrawal of this rejection is proper and the same is respectfully requested.

35 U.S.C. §103 Rejections

Claims 1-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nakacho (EP 0945478) in view of Ida (US 6,337,031) or An (US 5,028,347). This rejection is traversed.

The teachings of Nakacho have been discussed above. The Nakacho reference contains no teaching or suggestion of a composition including a phosphazene compatibility enhancing resin (or anti-bleed-out resin) consisting essentially of a PPE-based resin, or a mixture of a PPE-based resin and a PS-based resin, in specific amounts, as required by the pending claims. Accordingly, Applicants contend that the Nakacho reference cannot and does not render the claimed invention obvious.

As discussed above, and with the Examiner during the telephone interview, the Nakacho reference does not provide any teaching or suggestion that polyamide resins can suffer from poor compatibility with phosphazene flame retardants. It is also clear that the Nakacho reference also

does not teach or suggest a solution to the issue of poor compatibility, such as the presently-claimed use of a phosphazene compatibility enhancing resin or anti-bleed-out resin in specified amounts relative to the amount of the phosphazene compound. Thus, the Nakacho reference cannot and does not provide any motivation to the skilled artisan to select the presently-claimed elements, in the claimed amounts. The Nakacho reference does not render obvious the claimed invention.

Neither Ida nor An, whether taken singly or in combination, can overcome the deficiencies of Nakacho.

The Examiner has cited the Ida reference as disclosing a flame-retardant resin magnet material comprising a magnetic powder based on ferrite. The Examiner further states that it would have been obvious to add the magnetic powder of Ida to the composition of Nakacho with the expectation of obtaining a molded article such as a magnet, having flame retardancy as well as magnetism. Applicants disagree with this contention as applied to the present claims.

While the Ida reference discloses magnetic flame-retardant materials obtained by adding an alnico or ferrite-based magnetic powder to a flame-retardant resin comprising aluminum hydroxide, antimony trioxide, and polyamide, the Ida reference contains no teaching or suggestion of the use of phosphazene compounds as flame retardants, and, *a fortiori*, does not contain any teaching of the addition of a phosphazene compatibility enhancing resin (or anti-bleed-out resin) to a fire retardant polyamide composition. Indeed, as discussed at the Interview, the Ida reference actually states that "it is completely unclear whether polyamide resins can be used as base resins, not to mention the fact that no information is yet available concerning the mixing ratios of various flame retardants in cases in which such polyamide resins are used as base resins," see, e.g., Ida at Column 2, lines 36-41. The flame retardants disclosed in the Ida reference for use with polyamides do not include phosphazenes.

Therefore, no combination of Nakacho and Ida teach or suggest the subject matter of any of the pending claims. There is simply no teaching in the Ida reference that (alone or in combination with the other cited references) would lead one of skill in the art to arrive at the

claimed invention. Indeed, the Ida reference suggests, as described above, that the use of polyamide resins with flame retardants is "unclear"; Ida does not teach or suggest the use of phosphazenes, nor the need for compositions containing phosphazene compatibility enhancing resins.

The Examiner has cited An as disclosing a flame-retardant magnetic composite resin composition comprising a magnetic powder. The Examiner avers that it would have been obvious to add An's magnetic powder to the composition of Nakacho with the expectation of obtaining a molded article such as a magnet, having flame retardancy as well as magnetism. Applicants respectfully disagree.

As discussed *supra*, Nakacho contains no teaching or suggestion of a composition including a phosphazene compatibility enhancing resin (or anti-bleed-out resin) consisting essentially of a PPE-based resin, or a mixture of a PPE-based resin and a PS-based resin, in specific amounts, as required by the pending claims.

The An reference discloses magnetic flame-retardant resin compositions comprising a polyamide resin, a phenol derivative, a thiophosphate compound, a copper compound, a flame-retardant agent, a flame-retardant synergist, and a magnetic powder which is treated with a surface-modifying agent. However, the An reference does not teach or suggest the use of phosphazene compounds as fire retardants, and does not contain any teaching of a composition including a phosphazene compatibility enhancing resin (or anti-bleed-out resin), in the claimed amounts, to a flame retardant polyamide composition.

Therefore, no combination of Nakacho and An can teach or suggest the subject matter of any of the pending claims. There is simply no teaching in the An reference that (alone or in combination with the other cited references) would lead one of skill in the art to arrive at the claimed invention.

The Examiner also states (presumably with reference to pending claim 15) that the teachings of An "would suggest [to] one of ordinary skill in the art to surface treat glass fibers in

the flame retardant composition of Nakacho in order to improve dispersability and thereby enhance mechanical strength and flowability." Applicants respectfully disagree.

First, as described above, the teachings of the Nakacho and An references, whether taken alone or in combination, do not teach or suggest any of the resin compositions of the invention as claimed. Thus, all the pending claims, including claim 15, are patentable over these references, alone or in combination.

Second, Applicants respectfully submit the teachings of An cannot be applied to the composition of claim 15, in which a glass fiber (as an inorganic filler) is surface-treated with a silane-based coupling agent. An teaches surface modification of magnetic particles, but An does not teach or suggest incorporation of *glass fibers* into resin compositions. As described in the present specification, e.g., at page 11, lines 19-21, glass fibers can be surface-treated with a silane-based coupling agent "in order to enhance adhesion to the polyamide resin." An cannot and does not teach or suggest incorporation in the resin of a surface-modified glass fiber such as glass fibers treated with silane-based coupling agents (e.g., as required by pending claim 15).

Nakacho also does not disclose a surface-treated glass fiber with a silane-based coupling agent. Thus, no combination of Nakacho and An teaches or suggests the composition of claim 15.

Reconsideration and withdrawal of these rejections is proper and the same is requested.

Claim 16 is rejected under 35 U.S.C. §103(a) as being unpatentable over Nakacho (EP 0945478) in view of Ida (US 6,337,031) or An (US 5,028,347), and further in view of White (US 4,806,602). This rejection is traversed.

White does not overcome the deficiencies of Nakacho in view of Ida and/or An discussed *supra*. As described above, none of Nakacho, An, or Ida, alone or in combination, contain any teaching or suggestion of the addition of a phosphazene compatibility enhancing resin (or anti-bleed-out resin) consisting essentially of a PPE-based resin, or a mixture of a PPE-based resin

and a PS-based resin, in specific amounts to a polyamide resin, as required by the pending claims.

The Examiner states that White describes polyphenylene ethers capped with acetylated or related carbonyl moieties. The Examiner then states that it would have been obvious in view of the teachings of White to modify the polyphenylene ether resin used in the flame retardant composition of Nakacho since such a modified resin would be, according to the Examiner, less susceptible to oxidative degradation. Applicants respectfully disagree.

The White reference discloses a method to cap a polyphenylene ether; however, there is no description or suggestion of its use in flame retardant resin compositions. There is no teaching or suggestion in White of a fire retardant resin comprising polyamide resin, a phosphazene compound and a phosphazene-compatibilty enhancing resin in the amounts required by pending claim 16. There is clearly no teaching or suggestion in White that such a resin could be modified as suggested by the Examiner to achieve the allegedly superior results. One of the ordinary skill in the art would not be motivated to combine Nakacho, Ida and An with White in the manner proposed by the Examiner. The Examiner's assertion that this combination would have been obvious appears to be impermissible hind-sight, using the present specification as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art. This is improper. See, e.g., *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

Reconsideration and withdrawal of the rejection is proper and the same is requested.

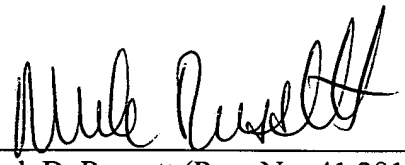
Conclusion

For at least the above reasons, Applicants request reconsideration of the application and an early indication of allowability.

The undersigned requests any extensions of time necessary for response. Although it is not believed that any additional fees are needed to consider this submission, the Director is

hereby authorized to charge our Deposit Account No. 04-1105 should any fee be deemed necessary. If the Examiner considers that obstacles to allowance still exist, the undersigned invites a telephone call at the number indicated below.

Respectfully submitted,



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